CLAIMS

1. A method of operating a pulse width modulated display system having a plurality of pixels each of whose illumination is controlled responsive to the actuation state of pulses within a sequence of pulse width segments, with the state of each individual pulse in a segment determining whether the corresponding pixel remains illuminated during the interval associated with that pulse, comprising the steps of:

altering the actuation state of at least one pulse in a first pulse width segment to alter the pixel brightness within a range lying between first and second pixel brightness boundaries; and

altering the actuation state of at least one pulse within at least one additional pulse width segment to alter the pixel brightness above the second brightness boundary such that the at least one pulse within the at least one additional segment is altered so as to make nearly equal the total width of pulses becoming actuated within a segment, and the total pulse width becoming de-actuated within the same segment to achieve an incremental change in brightness.

2. The method according to claim 1 wherein the at least one pulse in the first segment is actuated to achieve an incremental increase in pixel brightness.

3. The method according to claim 1 wherein the at least one pulse in the first segment is de-actuated to achieve an incremental decrease in pixel brightness.

4. The method according to claim 1 wherein the at least one pulse in the at least one additional segment is actuated to achieve an incremental increase in pixel brightness.

5. The method according to claim 1 wherein the at least one pulse in the at least one additional segment is de-actuated to achieve an incremental decrease in pixel brightness.

6. The method according to claim 1 wherein the pulse width modulated display system displays a colored image by sequentially projecting each of three primary colors and wherein each color comprises a separate sequence of pulse width segments that are interleaved with those of the other primary colors.

7. A method of operating a pulse width modulated display system that displays color images, the system having a plurality of pixels each of whose illumination for a given one of a set of primary colors is controlled responsive to pulses within a sequence of pulse width segments for that color, with each segment associated with a given color interleaved with the segments associated with other colors, the state of each pulse in the segment for that color determining whether the corresponding pixel remains illuminated for that color during the interval associated with the pulse, comprising the steps of:

altering the actuation state of at least one pulse in a first pulse width segment for a given color to increase pixel brightness within a range lying between first and second pixel brightness boundaries; and

altering the actuation state of at least one pulse within at least one additional pulse width segment for the given color to alter the pixel brightness above the second brightness boundary such that the at least one pulse within the at least one additional segment is altered so as to make nearly equal the total width of pulses becoming actuated within a segment, to the total pulse width becoming de-actuated within the same segment to achieve an incremental change in brightness.

8. The method according to claim 7 wherein the at least one pulse in the first segment is actuated to achieve an incremental increase in pixel brightness.

9. The method according to claim 7 wherein the at least one pulse in the first segment is de-actuated to achieve an incremental decrease in pixel brightness.

10. The method according to claim 7 wherein the at least one pulse in the at least one additional segment is actuated to achieve an incremental increase in pixel brightness.

11. The method according to claim 7 wherein the at least one pulse in the at least one additional segment is de-actuated to achieve an incremental decrease in pixel brightness.

12. A method of operating a pulse width modulated display system having a plurality of pixels each of whose illumination is controlled responsive to the actuation state of pulses within a sequence of pulse width segments, with the state of each individual pulse in a segment

determining whether the corresponding pixel remains illuminated during the interval associated with that pulse, comprising the step of:

altering the actuation state of at least one pulse within at least one pulse width segment to alter the pixel brightness such that the at least one pulse within the at least one segment is altered so as to make nearly equal the total width of pulses becoming actuated within a segment, and the total pulse width of pulses becoming de-actuated within the same segment to achieve an incremental change in brightness.

13. A pulse width modulated display system comprising:

a light source

a projection lens for focusing incident light onto a screen

a Digital Micromirror Device having a plurality of individual micromirrors arranged in an array, each micromirror pivotal about an arc in response to receipt of a drive signal applied to a driver cell associated with the micromirror to reflect light from the light source into the projection lens and onto the screen to illuminate a picture element (pixel) therein;

a rotating color wheel interposed between the light source and the digital micromirror to successively impart each of three primary colors to the light striking the digital micromirror device and reflected thereby into the projection lens;

a processor for forming sequences of pulse width segments by altering the actuation state of at least one pulse in a first pulse width segment for a given color to alter the pixel brightness within a range lying between first and second pixel brightness boundaries; and by altering the actuation state of at least one pulse within at least one additional pulse width segment to alter the pixel brightness above the second brightness boundary such that the at least one pulse within the at least one additional segment is altered so as to make nearly equal the total width of pulses becoming actuated within a segment, to the total pulse width becoming de-actuated within the same segment to achieve an incremental change in brightness; and

a driver circuit responsive to the sequences of pulse width segments formed by the processor for driving the digital micromirror device to illuminate the corresponding pixel.

14. The system according to claim 13 wherein the at least one pulse in the first segment is actuated to achieve an incremental increase in pixel brightness.

15. The system according to claim 13 wherein the at least one pulse in the first segment is de-actuated to achieve an incremental decrease in pixel brightness.

16. The system according to claim 13 wherein the at least one pulse in the at least one additional segment is actuated to achieve an incremental increase in pixel brightness.

17. The method according to claim 13 wherein the at least one pulse in the at least one additional segment is de-actuated to achieve an incremental decrease in pixel brightness.